

ABSTRACT

A method for manufacturing contact holes with spacers between a substrate and an interconnect layer or between two interconnect layers is disclosed. The method produces contact holes with a relatively uniform CD from top to bottom, i.e. without a rounded top, thereby increasing the reliability of the contact hole. A dielectric layer, antireflective layer and patterned photoresist layer are deposited in sequence over a substrate or bottom interconnect layer. Contact holes are etched into the antireflective layer and the dielectric layer exposing a surface of the substrate or bottom interconnect layer. A spacer material is deposited onto the antireflective layer and into the contact holes. The spacer material is then anisotropically etched from the antireflective layer, leaving the spacer material in the contact holes. The etching process preferably removes the spacer material at a faster rate than the antireflective coating layer.